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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

BAKER, A

ART UNIT

PAPER NUMBER

1632

DATE MAILED:

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/060,409

Applicant(s)

SAH ET AL.

Examiner

Anne M. Baker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-16 and 47-69 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-9, 47 and 48 is/are allowed.
- 6) ☒ Claim(s) 10-16, 49 and 52-69 is/are rejected.
- 7) ☒ Claim(s) 50 and 51 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on 14 April 1998 is: a) ☐ approved b) ☒ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 16.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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DETAILED ACTION

The amendment filed March 26, 2001 (Paper No. 18) has been entered. Claims 6, 9, 10, and 12-14 have been amended. Claims 47-69 have been newly added.

Claims 6-16 and 47-69 are pending in the instant application.

The following rejections are reiterated or newly applied and constitute the complete set of rejections being applied to the instant application. Rejections and objections not reiterated from the previous office action are hereby withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 54-69 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 54-59 are directed to methods for transplanting cells into a mammal or into a patient.

With regard to Claims 54-59, the specification fails to provide an enabling disclosure for the method of cell-based therapy because methods of transplantation of neural tissue or other cells into the PNS are not routinely successful and the specification does not offer adequate guidance to enable one skilled in the art to practice the claimed invention to derive a therapeutic benefit in a diseased animal. The specification teaches that the only use for the claimed method of transplantation is to produce a therapeutic effect but the

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specification does not adequately teach how to use the claimed method to produce such an effect. Jackowski et al. (1995) details the limitations and unpredictability associated with the transplantation of neural tissue. At page 311, column 1, paragraph 2, the reference discusses barriers to successful transplantation of neural tissue, notably the presence of molecules that actively inhibit the regeneration of mammalian CNS and PNS axons. Moreover, the reference goes on to point to the inability of regenerating dorsal root sensory axons that cross the dorsal root transition zone (DRTZ) (p. 311, column 1, paragraph 2). The specification does not offer any guidance as to how the claimed method could be used therapeutically for the treatment of any disorder, including chronic pain, a neuropathy, or a pathological condition characterized by neurodegeneration. No working examples demonstrate a therapeutic effect for the claimed method of transplantation. The specification provides general teachings only (see pages 18-19 of specification), but does not provide specific guidance for treating a pathological condition. The specification fails to provide any guidance relating to the number of cells to inject, the site of injection, and the extent of cellular persistence required and attainable in practice, to provide any therapeutic benefit for the treatment of any disorder.

Given the lack of specific guidance in the specification, the broad scope of the claims, and the lack of working examples directed to producing a therapeutic effect upon transplantation, one of skill in the art would have been required to engage in undue experimentation to practice the claimed method.

Claims 60 and 61 are directed to a method for screening for an agent that modulates the activity of a protein produced by a dorsal root ganglion cell. Claims 62 and 63 are directed to a method for detecting the presence or absence of a protein in a sample. Claims 64 and 65 are directed to a method of identifying a human dorsal root ganglion gene or protein. Claims 66 and 67 are directed to a method for screening for an

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agent that affects dorsal root ganglion cell death. Claims 68 and 69 are directed to a method for screening for a protein that regulates dorsal root ganglion cell death.

With regard to Claims 60-69, the specification fails to provide an enabling disclosure for the claimed methods because the specification does not provide adequate guidance for performing the appropriate assays necessary to carry out the methods. The specification does not teach specifically what parameters should be measured to determine e.g. that an agent modulates the activity of a protein produced by a dorsal root ganglion cell, as recited in Claims 60 and 61, or for detecting the presence or absence of a protein in a sample, as recited in Claims 62 and 63. Claims 62 and 63 recite “detecting a response in the cell,” but the specification does not teach what type of response must be detected or how it is to be detected. There is no specific guidance regarding what measurements to make or how to use the measurements to arrive at the desired conclusion, such as “detecting the presence or absence of a protein in a sample.” At page 16, lines 26-27, the specification contemplates using an antibody to detect a protein. However, the method recites “detecting a response in the cell.” Thus, it is unclear how it is that the protein in the sample is actually detected in a method where the sample containing the protein is contacted with the cell and some response in the cell is detected. No further guidance is offered with regard to how to carry out the method.

Given the lack of specific guidance for performing the necessary assays to carry out the various methods, the broad scope of the claims, and the limited working examples, one of skill in the art would have been required to engage in undue experimentation to practice the claimed methods.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-16, 53, 54, 55, 60-63, and 66-69 stand and are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 is indefinite in its recitation of the phrase “wherein the oncogene is selected from the group consisting of v-myc, N-myc, c-myc, SV40 large T antigen, polyoma large T antigen, E1a adenovirus, and E7 protein of human papillomavirus” because the members of the Markush group are all proteins, not oncogenes. Use of the phrase “wherein the oncogene encodes a protein selected from the group consisting of v-myc, N-myc, c-myc, SV40 large T antigen, polyoma large T antigen, E1a protein of adenovirus, and E7 protein of human papillomavirus” is recommended. Claim 11 is indefinite in so far as it depends from Claim 10.

Claim 12 is indefinite in its recitation of “upon substantial inhibition of the activity of the oncogene” because genes themselves do not have activity; proteins have activity, promoters have activity, but genes do not. Use of the phrase “upon substantial inhibition of expression of the oncogene” is recommended.

Claims 12-14 are indefinite in their recitation of “capable of” because a capability is a potential and not an actual property or physical limitation. Use of the phrase “wherein the cell differentiates into neurons upon substantial inhibition of expression of the oncogene” is recommended. Claims 15 and 16 are indefinite in so far as they depend from Claim 12.

Claims 15 and 16 are indefinite in their recitation of “capable of” because a capability is a potential and not an actual property or physical limitation. Recitation of the term “capable” in the claims implies that the cells can differentiate into the specified cell type under certain prescribed conditions, but the claims do not

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delineate the conditions under which said differentiation actually occurs. With regard to Claim 15, use of the phrase “wherein the cell differentiates into sensory neurons under appropriate culture conditions.” With regard to Claim 16, use of the phrase “wherein the cell differentiates into nociceptive sensory neurons under appropriate culture conditions.”

Claim 53 is indefinite in its recitation of “and therefrom determining whether the cells are capable of differentiation into neurons” because it is unclear if this is a separate step or if the results obtained from “the step of determining the presence or absence of bIII-tubulin positive cells in the proliferative growth condition” are all that is used to determine “whether the cells are capable of differentiation into neurons.”

Claim 54 is indefinite in its recitation of “transplanting a dorsal root ganglion cell into a mammal” because the claim further recites administering “a cell produced according to the method of claim 6” and the method of claim 6 involves producing “a conditionally-immortalized dorsal root ganglion progenitor cell.” Thus, the preamble of the claim refers to a cell type that is broader in scope than the cell type produced by the method of claim 6. In other words, the preamble recites a cell type that need not be a progenitor cell nor conditionally-immortalized.

Claim 55 is indefinite in its recitation of “transplanting a dorsal root ganglion cell into a mammal” because the claim further recites administering “a cell according to claim 12” and the cell of claim 12 is “a conditionally-immortalized dorsal root ganglion progenitor cell.” Thus, the preamble of the claim refers to a cell type that is broader in scope than the cell according to claim 12. In other words, the preamble recites a cell type that need not be a progenitor cell nor conditionally-immortalized.

Claims 60 and 61 are indefinite in their recitation of “measuring the ability of the candidate agent to modulate the activity of a protein produced by the cell” because it is unclear what type of measurement is being referred to.

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Claims 62 and 63 are indefinite in their recitation of “detecting a response in the cell” because it is unclear what type of response is to be detected. The claims are also indefinite in their recitation of “therefrom detecting the presence of a protein in the sample” because it is unclear how the “response” correlates with the presence of the protein in the sample.

Claims 66 and 67 are indefinite in their recitation of “measuring the ability of the candidate agent to affect death of the cell” because it is unclear what type of measurement is being referred to. Furthermore, it is unclear how the measurement correlates with “identifying an agent that affects dorsal root ganglion cell death.”

Claims 68 and 69 are indefinite in their recitation of “measuring the effect of the alteration on the death of the cell” because it is unclear what type of measurement is being referred to.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 49 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,197,585 B1 (Stringer et al., 2001).

Claim 49 is directed to a neuron produced according to the method of Claim 47. Claim 52 is directed to a neuron produced according to the method of Claim 50.

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Claims 49 and 52 are product-by-process claims. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. The patentability of a product does not depend on its method of production. See M.P.E.P. 2113. Thus, the claim reads on neurons disclosed in the prior art, for the reasons set forth herein below.

At Columns 13 and 14, Stringer et al. (2001) disclose neural cells that have been conditionally-immortalized by transfecting the cells with the gene encoding the temperature-sensitive SV40 T antigen. These cells were grown at the non-permissive temperature and in the presence of various neurotrophic factors to induce differentiation. Neuronal cells were produced by treating the immortalized cells with glial-derived neurotrophic factor (GDNF). See Column 13, lines 62-65. Thus, the patent discloses neurons produced from precursor cells that carry the gene for the temperature-sensitive SV40 T antigen. In the absence of evidence to the contrary, these neurons are indistinguishable from those instantly claimed. Thus, the claims read on neurons disclosed in the prior art.

Conclusion

Claims 6-9, 47, and 48 are allowable.

Claims 50 and 51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened

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statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne-Marie Baker whose telephone number is (703) 306-9155. The examiner can normally be reached Monday through Thursday and alternate Fridays from 9:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karen Hauda, can be reached on (703) 305-6608. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-8724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the patent analyst, Kay Pinkney, whose telephone number is (703) 305-3553.

Anne-Marie Baker, Ph.D.



JILL D. MARTIN
PRIMARY EXAMINER